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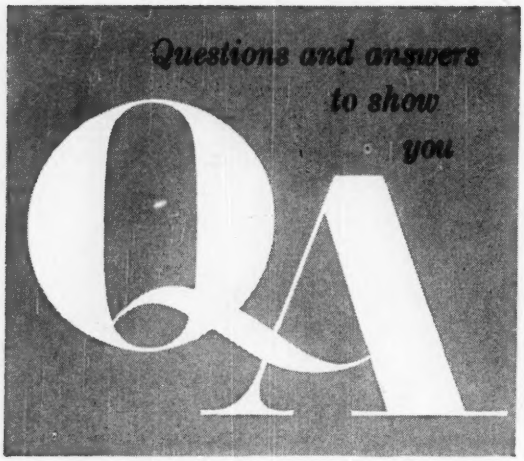

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SCHOOL AND SOCIETY

NOVEMBER 18, 1961

Volume 89 Number 2199

COVER

A new approach to the teaching of mathematics ("Math Workshop for Children") is demonstrated at a Bucks County, Pa., elementary school. Using new method, Robert Wirtz, co-author of the new system, shows children that addition can be done up, down, and sideways.

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THIS BOOK examines the many facets of the past problems and present controversies involving the relations of church and state in education—in the U.S. and abroad. The editors have arranged for previews of the book in the May issues of *School and Society.*

CONTENTS—Preface; Introduction; Constitutional and Legal Aspects of the Church-State-School Problem; Public Aid to Religious Education; Religion and Public Education; Public Service of the Lutheran School; The Controversy Over Public Support to Parochial Schools; A Jewish Viewpoint on Church-State-School Relations; Religious Celebrations in School; Baccalaureate in Brodhead: Interfaith Tension; The Debate Over Public Aid to Religious Schools; Church, State, and School in International Perspective; Appendix: Chronological Outline of Church-State Relations in American Education; Documentary Material; Biographical Data of Contributors.

292 pages • $5.25 (cloth), $3.75 (paper)

SAE SOCIETY FOR THE ADVANCEMENT OF EDUCATION, INC.
1834 Broadway, New York 23, N.Y.

Editorial

THE COLLEGE PRESIDENCY

Resignations and involuntary retirements of college and university presidents seem to have become more frequent in recent years. For some executives, the position, with its multifarious duties, many of them having little direct connection with the basic mission of higher education, has become excessively onerous, spirit-crushing, and body-weakening. Others have lamented the lack of time to devote to educational problems, to research, or even to read at will. In short, what appears to be a position of glamor and influence turns out in many cases to be a bore and a man-killer.

The refusal of outstanding individuals to continue as presidents should give anyone concerned with higher education sufficient reason to reflect upon the entire system of college and university administration. Perhaps a fundamental revision should be considered.

The system of selecting university presidents is undoubtedly rooted in historical, ideological, economic, and other factors. Since it is evident that the presidency has become more of a social, diplomatic, financial, and administrative post than one of scholarly and educational leadership, it is justifiable to inquire if a change is in order at this time. If education is to be worthy of the adjective "higher," then it seems that its destiny ought to be handed over to those who really exemplify the ideals for which it stands. If the university aims at a combination of teaching, scholarship, and public service, it would seem that its scholars should direct its functions and activities.

This is hardly a radical suggestion. The rector of European universities has been drawn traditionally from among the professors. The position generally rotated each year and the incumbent was *primus inter pares*. A permanent staff of experienced administrators and financial officers took care of the various day-by-day details of running the institutions. The universities remained first and foremost an educational organization—to the students, professors, and the public.

In all probability, there will be no frantic rush to reform the administrative setup in American higher education. Many of those associated with or interested in colleges and universities will doubtless devise reasons for not adopting a practice which apparently has been satisfactory a long time in Europe. What should not be forgotten, however, is that a system whereby a president is elected by the faculty represents actual democracy in education, a procedure which has persisted more in publications than in practice. Further, a chief executive does not give up his scholarly and intellectual interests, but for a year or two at the most becomes relatively unproductive. This is a rather small price for the freedom of keeping the university perpetually under the direction of the persons who make it what it is.

There are other possibilities of making the presidency a more palatable professional position, assuming that the European tradition is not adopted. Let the presidents be scholar-teachers and let them be given by the boards of trustees sufficient encouragement, time, and recompense to continue their intellectual labors. Such executives will appreciate the fundamental problems of the university and will have enough insight to be able to work together with a faculty of peers. Presidential assistants and associates should be appointed to take over many of the variegated and the time-consuming duties of the president.

A faculty, deans, and a president dedicated to the fundamental objectives of a university would bring about an elevation of intellectual standards, a rise in the esteem in which the institution should be held, and an expansion of its influence. Under the present system, extraneous values and considerations rule all to often. It is obvious that the time is ripe for reform.

The university is a community of individuals devoted to scholarship, teaching, and intellectual service. It should be directed by one who has an intimate knowledge of these functions.

WILLIAM W. BRICKMAN

NEW ELEMENTARY MATHEMATICS METHODS

For over a year, some 4,000 pupils in the first three grades of the Bucks County, Pa., schools have been working with an entirely new concept in the teaching of mathematics in the elementary grades. No longer do these students begin by memorizing only the simple arithmetic of traditional methods; now they learn such complicated functions as fractions, negative numbers, and algebraic equations. This program of "new mathematics" will be introduced to schools throughout the country with the publication by Encyclopaedia Britannica Films of "The Math Workshop for Children," a complete mathematics course for the first three school grades.

"Under a new approach to mathematics," explained Morton Botel, co-author of the new program, "these pupils are learning about a new world of mathematics at surprising speed and at elementary grade levels never heretofore believed possible. While children are delighted by the stimulus of exploring the unifying concepts of mathematics, teachers are finding in this new method of teaching mathematics the first really new step toward making children understand what numbers mean. Arithmetic, algebra, geometry, trigonometry and calculus need not be taught as isolated subjects, but can be introduced as an interrelated 'whole concept' all at the same time." Developed by Botel and Robert Wirtz, the "Math Workshop" is the first program to implement the recommendations of the National Council of Teachers of Mathematics as set forth in the 24th Yearbook, "The Growth of Mathematical Ideas, K-12." Mathematics, the council points out, is still being taught in too many classrooms today as a collection of fragments and manipulations to be memorized. Teaching mathematics "as a whole concept," the council feels, will result in better interest, faster learning, and higher retention on the part of the pupil.

"Experience at Bucks County and other schools, using the 'Math Workshop' has proved this to be true," Mr. Wirtz said. "In addition, teachers found that since the liberal use of visual devices in the 'Workshop' placed less emphasis on reading skills, they were able to introduce mathematics to pupils at a lower grade level than had ever been envisioned. Slower pupils were no longer penalized because of difficulty with words and had a chance to develop their mathematical skills."

The "Math Workshop for Children" has been tested with more than 4,000 pupils since 1960. The material was used by 135 teachers and 15 instructional leaders in a 13-week workshop. The "Math Workshop" has drawn upon the feedback from these tryout teachers, demonstrations, interviews, and questionnaires, but has invented no new mathematics or any novel theories of education. Rather, it has tried to bring into a unified whole the most universally accepted ideas of both educators and mathematicians. This concept of learning mathematics, its authors feel, will not only introduce the fundamentals of mathematics in the early grades, but will make it possible to teach all the concepts of mathematics such as algebra, trigonometry, and geometry as a related whole to receptive pupils at very early stages.

EARLY TEACHING OF SCIENCE AND MATHEMATICS

Science education beginning in kindergarten has been proposed as part of a major program to effect improvements in science and mathematics instruction in all grades through junior high school. A report of a study undertaken by the American Association for the Advancement of Science also calls for a co-ordinated 10-year sequence of science as an important thread of a general education "to equip all persons for life in a scientific and technological society."

The study, sponsored by the National Science Foundation, sees the need for "a substantial team effort" of scien-

tists and educators to produce high quality materials for a major improvement in elementary and junior high science teaching. Instruction at the elementary levels would emphasize basic ideas used in science as well as the scientific method itself, particularly in its applicability to general problem-solving. Division of instruction into traditional categories of science would be avoided.

The report, "Science Teaching in Elementary and Junior High Schools," published in June by the AAAS in *Science*, is the result of three regional conferences held independently early in 1961 and attended by teachers, educators, scientists and psychologists interested in learning theory and representatives of course-content-improvement programs. NSF sponsored them as part of its growing support of projects to produce modernized and improved course-content materials for science and math on the elementary level, as well as for established projects for secondary education.

In avoiding the separate disciplines of science, the conferees suggested that science instruction could "develop specific awareness of natural phenomena, good habits of observation, understanding of classification, function, quantification, order, and other basic ideas used in science, drawing on all the sciences for examples," and instill some of the "spirit of discovery" characteristic of science. No single program for use in all school systems was seen advisable and it was stressed that subject matter and pace of elementary and junior high school science instruction could be chosen to best fit existing situations.

The conferees were in general agreement on the need for early exposure to science education and the formative role this can play: "If all of the more than thirty-five million pupils in elementary and junior high schools can be given good experiences in science, all will have a good start toward scientific literacy. Young children are naturally curious about the universe and are continuously exploring their immediate environment. During these early years children form their basic attitudes, patterns of thinking, and modes of behavior. It is therefore during these years that particular attention must be given to establish the attitudes and modes of inquiry that are associated with the scientific enterprise—its processes and content. Whatever the school does, children are inevitably exposed to 'science' and technology through all forms of mass communication; but they can acquire understanding of these powerful forces only through an orderly intellectual experience in the study of science. This orderly intellectual experience is the responsibility of the school." Development of top quality instructional materials for elementary and junior high science instruction will depend upon better "knowledge of child development and of how children learn science."

The conferees also came out strongly for institutes as a means of improving science instruction up to grade nine. Summer institutes and in-service institutes were urged for principals, curriculum directors, science supervisors, special science teachers, and others in a leadership capacity who in turn could direct and assist the great numbers of teachers who teach science part time.

A national advisory or steering committee was seen as the most effective way of providing direction to a program for the development of science materials for use in the elementary and junior high schools. It was recommended that the steering committee be composed of scientists, science educators, learning specialists, teachers, and supervisors. This group would encourage teams of highly competent scientists, teachers, and other educational specialists to identify major concepts, principles, and content to be included in elementary school programs, to prepare sequential plans for their development, and to prepare texts, teachers manuals, laboratory guides and equipment, and other learning aids. The conferees strongly emphasized the need for a number of such groups so that schools will have a broad range and variety of models and materials to choose from in creating their own science curriculum.

FEDERAL AID FOR THE PRIVATE COLLEGE

James A. Storing, new dean of the Colgate University faculty, said Sept. 25 that private colleges will need additional Federal support if they are to meet their responsibilities in the years ahead. He spoke at the Founders' Day Convocation in the Colgate Memorial Chapel. The event honored the meeting 144 years ago of the 13 men who founded the university and marked the beginning of the academic year.

Private institutions like Colgate will require a significant increase in government support without controls if they are to achieve such aims. "Rather than continuing to oppose State and Federal aid on principle as some college administrators have done in the past," Dr. Storing stated, "the private sector in American higher education must seek ways of obtaining the money, with minimal, or, if at all possible, non-existent controls."

He said that, remembering the meaningful heritage of the 13 founders, these general aims should guide Colgate in the years ahead: to obtain the best teachers and the best students available; to provide the student body with the richest and deepest educational experience possible: to provide more opportunity for independent study so that each student has every chance to do his own work; to remain an educational institution first, remembering that extracurricular activities are important but secondary; and to remain flexible and prepared for change.

STATISTICS ON GRADUATE FELLOWSHIPS

The nation's universities are granting more graduate fellowships in the physical sciences and mathematics than in any other fields, according to the U.S. Office of Education. However, substantial capacity in existing institutions for additional doctoral candidates goes unused because of a dearth of fellowship and other financial assistance.

The latest figures obtainable—for the school year 1959-60—reveal that 20,811 graduate fellowships were granted with a total value of $35,040,578. Fellowships for sciences and engineering were valued at $19,424,354. This is over half (55%) of the total value of all fellowships.

Fellowships in the social sciences and humanities were valued at $10,728,383, or 30.6%. The remainder, $4,887,841, or 13.9%, was given to education and miscellaneous fields.

The largest single number of fellowships, 2,032 with a dollar value of $3,594,827, were granted in the field of chemistry. Physics had 1,265 fellowships valued at $2,560,789; mathematics, 1,122 fellowships, at $2,469,314. English and dramatic art, with 1,477 fellowships valued at $1,913,430, was the only field in the humanities to rate among the top 10, measured by value of fellowships from all sources.

These are among the findings in a new Office of Education publication, "Doctoral Study, Fellowships and Capacity of Graduate Schools," by John L. Chase, specialist for graduate education. It is based upon replies to an Office of Education questionnaire from 139 universities which annually awarded 95% of all doctorates granted in this country.

Of the nearly 21,000 fellowships, 15,215 were awarded by the universities, 3,425 were federally financed, and private foundations awarded over 2,171.

While there was some variation in the rating of individual subjects, universities tended to use their own funds largely to support the same fields which received liberal support from Federal and other sources. However, tuition fellowships financed by the universities were much more evenly distributed between scientific and non-scientific areas than were the fellowships financed from outside sources.

FORD GRANTS TO LIBERAL ARTS COLLEGES

The Ford Foundation announced on Sept. 24 an extension of its year-old Special Program in Education to include independent liberal arts colleges as well as private universities. Pres. Henry T. Heald said the trustees had agreed to make available up to $100,000,000 for general-support grants to selected colleges over the next two years.

"The Special Program in Education is being extended to liberal arts colleges," he said, "because of the importance of the liberal arts—the humanities, natural sciences, and social sciences—in cultivating the thoughtful leadership and independent opinion essential in a free society. Support will be limited to four-year private colleges not part of a university because the role of these colleges is vital to higher education and their needs are critical."

Since September, 1960, grants totaling $53,500,000 have been made to six universities—Brown, Denver, Johns Hopkins, Notre Dame, Stanford, and Vanderbilt. Other universities may be added to the program from time to time.

Criteria for inclusion in the college part of the program of selected support are a private support structure, separate administrative and legal control (not a part of a university), strategic regional importance, strong constituency participation and support, strong trustee and presidential leadership, a tradition of scholarship, and a well-developed plan to improve liberal education.

Three principal features characterize the Special Program, according to James W. Armsey, its director. "First, the grants are designed to strengthen an institution's total achievement—its academic standards and administrative effectiveness. Second, the recipients of grants are free to use the funds in any way they decide will advance their long-range plans and goals; in short, the grants are free-fund general support. Third, through matching requirements, the grants are intended to help the institution increase both the number and amount of gifts from other sources—to broaden the base and extend the depth of regular continuing financial aid from alumni, business and industry, and other donors."

The foundation emphasized that the Special Program is not an effort to select the "best" universities or colleges, nor is it an award program for excellence already achieved. Rather, it is a program to build on excellence and realistic aspiration in a group of institutions with differing backgrounds, geographical location, and plans for the future.

The foundation announced an initial series of unrestricted grants totaling $13,600,000 to the following private liberal arts colleges for which data have been processed: Carleton, Goucher, Grinnell, Hofstra, Reed, Swarthmore, Wabash, and Wellesley Colleges.

BETTER PREPARATION FOR COLLEGE

Better high-school preparation and advanced teaching in mathematics, science, and language are making themselves felt with increasing effect at the college level. According to Associate Dean John C. Esty, Jr., Amherst College, about half the entering class is not taking the college's standard freshman course this fall. Since World War II, Amherst has required all students to take prescribed courses in mathematics-physics, English, the humanities, and history during the freshman year.

This year, the college added a number of special sections in mathematics and physics to accommodate students who have had advanced secondary school preparation in those fields. Of the entering freshmen, 43% are not taking the regular freshman mathematics course. About half of these will be in special sections, while another group will be taking a more advanced mathematics course.

About 17% of the class took the new Physical Science Study Committee physics course in secondary school. These men, along with some others who have had advanced physics in high school, will be enrolled in special sections within Amherst's regular freshman physics course.

In addition, a number of students will be enrolled in special sections in the college's freshman humanities course. Several others have been granted advanced placement in the humanities or in history, allowing them to enroll in sophomore courses in those subjects.

About 35% of the class have satisfied the college's language requirement. This requirement entails demonstrated proficiency in one foreign language as shown on College Board examinations before entrance or on an oral test administered by the college just before the beginning of classes.

Now in its Second Printing!

THE COUNTDOWN ON SEGREGATED EDUCATION

Edited by WILLIAM W. BRICKMAN, Professor of Education, New York University, and STANLEY LEHRER, Managing Editor, School and Society

THIS BOOK is a comprehensive, timely yet permanent source of information on the history, current situation, and possible future of segregated education in the U.S., South Africa, and other countries. Because of the scope of content alone, it is a most useful reference now available for the teacher, the student, and the general reader who are interested in a broad understanding of segregation and desegregation.

THE EDITORS offer a cross-section of various aspects of segregated education. By tapping the experiences and research of educators and government officials—nationally, internationally, and interracially—the editors also provide a necessary perspective and many-sided views of the past and present policies and practices concerning segregation. The book is based primarily upon data that the editors featured in special issues of *School and Society,* May 7 and 21, and additional material has been incorporated in the volume to bring the contents completely up to date.

CONTENTS—Preface; Introduction; *PART I,* THE NATIONAL SCENE: The History of Racial Segregation in American Education; Chronological Outline of Racial Segregation and Integration in U.S. Schools; Southern Attitudes Toward Racial Integration; The Impact of Segregated Housing on Public Schools; The Legal Status of School Integration; Foundations of the Second Reconstruction; Desegregation in Higher Education in the South; Desegregation in the District of Columbia: A Developmental Process; Exclusive State Control Over Public Education; *PART II,* THE INTERNATIONAL SCENE: Segregated Education in International Perspective; the Education of Racial Minorities in South Africa; Racial Segregation in Education in South Africa; Biographical Background of Contributors.

175 pages • 1960 • $3.50

SAE SOCIETY FOR THE ADVANCEMENT OF EDUCATION, INC.
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CO-OPERATION AMONG COLLEGES

Rising enrollments with their attendant costs—expected to be even greater in the years immediately following 1964—are inducing an increasing number of colleges and universities to pool their faculties, libraries, and other facilities, according to a report by Ernest V. Hollis, director, College and University Administration Branch, Division of Higher Education, U.S. Office of Education. Limited financial resources to meet the growing volume of enrollments are primarily responsible for co-operative programs which, in some cases, actually include all or most of the institutions of higher education in a given area. "Examples have been reported to indicate that co-operation among institutions is possible in such broad matters as statewide and regional planning for a frontal attack on the problems of higher education during the next decade to as specific a matter as joint purchasing of fuel oil to capitalize on bulk purchase prices."

In many such programs, two or more colleges in an area agree that graduate students registered at one of the colleges may, with permission, take courses at any of the co-operating colleges without paying additional tuition. In this way, the graduate student can obtain the best teaching in his specialty from a variety of educational sources.

Sometimes two or more colleges co-operatively offer evening courses for adults, usually in a building in the city apart from either campus. The faculty is furnished by any of the participating colleges or by the community, and credits are accepted by all of the participating colleges.

Another variation of these co-operative programs is the temporary loan or exchange of faculty members who, therefore, may teach undergraduates in more than one college during the same semester. Visiting personnel, such as artists, musicians, and lecturers, also may be exchanged.

Most co-operative plans provide for joint use of such facilities as libraries, laboratories, gymnasiums and field houses, and of certain types of expensive equipment. Sometimes a university which has an observatory in the area will open its facilities to students from participating universities.

The trend toward greater co-operation among universities is not, however, resistless. In some cases, statutory provisions prohibit an institution from entering into a co-operative agreement.

TEACHING THE NEW MATHEMATICS

A universal shift in emphasis in mathematics teaching —stressing the logic, structure, and unity of mathematics as a whole instead of the mere solution of routine problems in isolated branches of the subject—is urged by top-ranking mathematicians and mathematics educators of 16 European nations, the U.S., and Canada. If the proposed changes are accomplished in the next decade, they will be the first in more than a century for a school subject already badly behind the times. A specific proposal is that Euclid must go—and so must all other "dead, useless, outmoded or unimportant parts of mathematics." The Euclidean principles of geometry, taught to youth in many lands for countless generations, either must be greatly modified or replaced with an "imaginative, daring and quite revolutionary program in genuine accord with modern university mathematics." Euclid's ideas are useful, but they must be adapted to the mathematics needed in modern scientific and technical work and in industry, business, and the social sciences.

These are among the conclusions in a report issued by the Office for Scientific and Technical Personnel of the Organization for European Economic Co-operation in Paris. The Office for Scientific and Technical Personnel was set up in 1958 to promote international action to increase the supply and improve the quality of scientists and engineers in member countries.

The report, "New Thinking in School Mathematics," sums up an international seminar for improving mathematics education. The seminar, sponsored by the Organization for European Economic Co-operation, was held late in 1959 at Royaumont, France. It was attended by leaders in mathematics from the organization's 17 member countries and by four guest authorities from the U.S. The nations represented at the seminar were Austria, Belgium, Canada, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, Turkey, the United Kingdom, the U. S., and Yugoslavia. The 246-page report was written by Prof. Howard F. Fehr, head, department of the teaching of mathematics, Teachers College, Columbia University, who was chairman of the seminar's section on "New Thinking in Mathematical Education."

Among agreements and conclusions reached at the seminar were the following:

There is an urgent need to adapt school geometry and algebra to the "sweeping advances" in modern mathematics. This demands the elimination of "much obsolete or technically valueless" material from the traditional secondary school treatment of plane and solid geometry, algebra, and trigonometry. More thorough teaching of the "logical" aspects of these subjects—as opposed to rote or mechanical learning of them—is "imperative."

Another immediate task is to teach geometry and algebra as related subjects and as part of unified mathematics; they should be so taught that the difference between the two gradually will disappear.

If Euclidean geometry is changed, then much about triangles and other topics "must go." Euclid's synthetic geometry can be replaced by a program of elementary mathematics in which deductive geometry is treated by the use of vectors, or real numbers, and later merged with algebra. An algebraic treatment of the subject is proposed.

Trigonometry would enter the mathematics program naturally, not as a separate subject but as a part of algebra and geometry and later as part of analysis—the investigation of problems through the use of algebra.

The seminar proposed the introduction of elementary probability and statistical inference in the mathematics of secondary schools. Statistical inference has been called the subject in which one learns to make decisions on insufficient evidence. Probability and statistics are applied mathematics which today contribute to the "scientific method" basic to "so many fields, both in the physical sciences, in the science of human behavior, and, increasingly, in public affairs."

RECENT Publications

The following are 1961 editions, except where indicated otherwise

BRICKMAN, WILLIAM W., and STANLEY LEHRER (editors). *Religion, Government, and Education.* Pp. 292. Society for the Advancement of Education, 1834 Broadway, New York 23. $5.25 (cloth), $3.75 (paper).

MacLENNAN, HUGH (editor). *McGill: The Story of a University.* Pp. 135. George Allen & Unwin, London, England. 1960. 27s 6d net.

MARTIN, WILLIAM E., and CELIA B. STENDLER. *Child Behavior and Development,* pp. 618, 1959, $6.50; WILSON, EUGENE S., and CHARLES A. BUCHER, *College Ahead!,* pp. 212, $4.50. Harcourt, Brace and Company, New York 17.

MASON, MIRIAM E., and WILLIAM H. CARTWRIGHT. *Trail Blazers of American History.* Pp. 336. Ginn and Co., Boston 17. $3.20.

MAY, ROLLO (editor). *Existential Psychology.* Pp. 126. Random House, New York 22. 95 cents (paper).

The National Interest and the Teaching of English. Pp.

(Continued on page 405)

The Future of Education Is Now*

By J. C. WARNER
President, Carnegie Institute of Technology, Pittsburgh, Pa.

THE PRINCIPAL and almost only purpose of our primary and secondary schools should be the intellectual development, not the social adjustment, of our children. This should consist chiefly of solid subjects studied in sufficient depth to challenge the abilities of the students. It should provide a knowledge of our heritage, our institutions, and the natural sciences and mathematics. It should make the student acquainted with some of the great masterpieces of thought and expression and it should develop the art of reading, the arts of oral and written communication, and the art of self-discipline.

All students should follow the course of study in solid subjects as long as their intellectual ability is adequate to the task. When a limit is reached below that required as preparation for higher education, students should be directed into those vocational studies for which they have greatest aptitude so that they will attain the skills needed for useful employment. In between these and those clearly headed for higher education there will be some students who are capable of profiting by solid subjects throughout secondary school, but then they should be prepared for a vocation in a post-high school one- or two-year terminal program provided by a junior or community college or a technical institute. Vocational education must play an increasingly important role in our society because of the steady decline in the opportunities for the employment of unskilled workers. Vocational training of the above sort must also be increasingly provided for the retraining of workers whose skills have become obsolete. Certainly vocational training and retraining and means for increasing the mobility of labor must be important elements in any scheme to promote full employment.

To assure the survival and prosperity of our free society in *our future*, it is mighty important that all those in secondary school who have demonstrated that they have the capacity and the will to profit by higher education should have the opportunity to do so. What fraction of our college-age population are likely to be in this group? In 1955-56, a little over one-third of our college-age population of 8,500,000 were in institutions for higher education—actually 35.1%, or about 3,000,000. By 1970, our college-age population will have increased to about 14,500,000, and the planners in the U. S. Office of Education predict that 44.4% or about 6,400,000 will be in institutions of higher education. The latter figure might be reasonably reliable for 1970 if it included students in post-high school vocational education as well as students working toward baccalaureate or higher degrees. I doubt that the percentage in higher education should be much higher than at present, around 36-37%. While an appreciable number of students of good ability do not go to college, there are just about as many in college who should not be there as are not in college who should be there. We should tighten up on admission standards so that we do not waste educational resources on the unfit, and we should do everything we can to see that the able student is motivated to take advantage of higher education and that there is no economic barrier in his path.

Higher education also should have as its principal aim the intellectual development of students. Every program should have a dual objective: provide the student with a solid core of liberal studies and give him an understanding of a scholarly or professional field so that he is competent to do socially useful work in the field. In this rapidly changing world it is of extraordinary importance that all programs be designed so that formal education is most useful as a base for a lifetime of education—mostly self-education. To accomplish these fundamental purposes it is becoming more necessary in most scholarly and professional fields to educate the most able and most highly motivated, who are going to be our leaders, to high levels of competence in graduate school.

Education for the various scientific and engineering professions fits into the over-all broad picture. Let us explore in somewhat more detail, however, ideas which seem rapidly to be coming into focus among our leading educators in science and engineering.

First of all, everyone stands by the decisions made back in the 1930's that scientific and engineering education needed to be liberalized by providing curriculum time for a solid, effective core of studies in the humanities and social sciences. Today, if we argued for change in this aspect, we would argue for more time or greater effectiveness for this part of the curriculum for two reasons. It is urgent that the natural scientists and the engineers establish better rapport with the humanists and social scientists. It steadily is more clearly recognized that our scientific and technological problems almost invariably contain social, economic, political, or moral ele-

* From an address at the Ford Motor Company's Engineering Educators Forum, Dearborn, Mich., June 22, 1961.

ments. And we can not give complete or best solutions without considering these elements and human behavior. This is best illustrated by problems in what may be called the area of systems and communication science and technology.

On the scientific-technological side, engineering education has undergone steady change during the past quarter-century. A most significant step was taken in the 1930's by focusing this part of engineering education on the long pull—our future—instead of on the "here and now." Much "know-how" and descriptive material were discarded and a new emphasis was placed on giving the student a thorough understanding of basic science, skill in the use of science in the solution of engineering problems new to the student, and the habit of trying to learn something from each experience. Since that time there has been an increased emphasis on the engineering sciences underlying all branches of engineering and a further decrease in the time spent on specialized engineering applications and subjects. All this has led to more common subjects in engineering curricula and, consequently, less sharply defined departmental lines. Right now, there is a lot of soul-searching going on in an effort to design formal higher education in engineering to serve *our future* best. Considering the rapid rate of change in science and technology, the rapid change in our domestic and world environment, the new tools steadily being made available to us, and the growing complexity of our most pressing problems, we are led to the following general conclusions:

1. No lasting benefit can be derived any longer from giving curriculum time to the study of present "know-how."

2. Every emphasis must be placed on preparing the student for a lifetime of education, mainly self-education.

3. No curriculum time should be used to train engineers to do what computers can do for them, but curriculum time must be given to learning what computers can do.

4. During formal education it would be well to de-emphasize loyalty to an individual professional field and encourage an attitude favorable to crossing the standard departmental lines in an interdisciplinary attack on complicated problems.

There is ample evidence from the observation of the careers of engineers we know that engineers who do not continue their education, whether they be in industry or the colleges, become obsolete. This is borne out by the Engineers Joint Council salary studies: in general, curves showing median salaries as a function of years out of college reach a maximum at about 25 years out and then either stay about constant or decline. Salary curves for those in the lower quartile and lower decile in general reach a maximum earlier and are more likely to decline than the median. Salary curves for the upper quartile usually continue to rise somewhat even after 35 years out of college, and for the upper decile the curves continue to rise very substantially. It seems safe to assume that the upper quartile and decile are the smart engineers who have continued their education throughout their professional careers.

In a recent paper entitled "Education for Oblivion?" Thomas E. Stelson, head, civil engineering department, Carnegie Institute of Technology, has emphasized the importance of continuing education in the following words:

"The decline in value or obsolescence of engineering personnel may likely become an increasingly serious problem in modern technology unless professional societies, employers and schools recognize its importance and develop suitable remedies. The problem may be viewed as a combination effect of growth and change. New knowledge is continually being developed. A practicing engineer must continually grow in new knowledge or he will decline in his relative position with respect to the frontier of knowledge."

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THE BARNARD LEGACY*

By RICHARD KNOWLES MORRIS
Associate Professor of Education, Trinity College, Hartford, Conn.

HENRY BARNARD'S life (1811-1900) spanned almost the entire 19th century. He crowded into these years activities worthy of the efforts of a dozen men. He was the first Secretary of the Connecticut Board of Commissioners of Common Schools; founder and one-time editor of the *Connecticut Common School Journal;* the first State Superintendent of Education in Rhode Island; the first Superintendent of Common Schools of Connecticut and concurrently first principal of the State Normal School, New Britain; founder, co-editor, and one-time publisher of the great *American Journal of Education;* chancellor of the University of Wisconsin and president of St. John's College, Maryland; and the first U.S. Commissioner of Education. Had Henry Barnard assumed but one of these positions, undertaken but one of these tasks, his name would have been secure in the history of education.

Barnard's convictions on educational issues arose from no armchair speculation, no pronouncement of "ought" from within isolated ivy walls, no share in the mass belief that anyone of legal age could "keep school." They grew out of the vivid recollections of his own schooling in the South Green district of Hartford; out of the shared struggles of enlightened friends and neighbors; and out of an unprecedented number of school visitations in Connecticut and Rhode Island. A brief review of the state of education as he found it in those early years will provide the clue to the changes he proposed and the public school philosophy which still has meaning for us today.

"The miserable district schools," the "utterly abominable methods," the "harsh and demoralizing discipline," the "pitiful compensation of teachers"—these were descriptions Barnard used in his Reports. School terms in many districts ran for only three months of the year. In Connecticut, the only public financial support came from the interest on the principal in the Permanent School Fund established from the proceeds of the sale of her lands in the Western Reserve. To supplement this revenue, indeed to survive, many districts had revived the discriminating colonial rate-bills. In his first Annual Report (1840), Barnard revealed that the salary of male teachers, exclusive of board, averaged $15.48 per month; of female teachers, $8.33 per month. He decried the practice of "boarding around" as harmful to the dignity of teachers, creating an environment not likely to encourage independent study after school hours. He found it particularly embarrassing for the woman, who, in order to secure the privacy she deserved, paid for her own accommodations out of the pittance called her salary. Other observations led him to insist that the woman teacher often was better qualified and more devoted to her duties than her male counterpart. He denounced the discrepancy between the salaries of men and women. The high turnover of teaching personnel in the district schools he termed "a serious defect" of the system, wasteful, expensive, "a practice," he added, "that excludes from our common schools nearly all those who have decided to make teaching a profession, and drives them almost as a matter of course into private schools and academies."[1]

Against this backdrop stand our own perplexing problems of education. The urgency of these problems has been sharpened by international events to the point where every level of instruction, every institution (public or private), every agency (local, state, or Federal) has felt the need to re-examine its objectives. In a controversy of such proportions, we are prone to forget the long struggle out of which the American system of education emerged. When we ignore origins, it is easy to compromise long fought-for principles or to repudiate them altogether. Hence, it is well to remind ourselves of those areas to which Henry Barnard contributed so much, for they are precisely the areas around which much of our present controversy revolves.

It was one thing, at the vigorous age of 33 in Rhode Island, to face the demands that that "damned Connecticut man" go home. "He might as well take a man's ox to plow his neighbor's field as to take his money to educate his neighbor's child."[2] These good people felt, as James Hughes has suggested, that, if Barnard's proposal for tax-supported schools was not high treason, at least it was high-handed robbery. But young Henry had the energy, the vision, the

* From the Henry Barnard Sesquicentennial Address, Trinity College, Hartford, Conn., Jan. 24, 1961.

[1] "First Annual Report," Secretary of the Board of Commissioners of Common Schools, Connecticut, 1840, pp. 37-38.

[2] J. S. Hughes, "Henry Barnard: The Nestor of American Education," *New England Magazine,* 20: 5-16, July, 1896.

practical organizing ability to stay on in Rhode Island until "those who came to scoff, remained to praise."

It would be quite another thing, after accepting the heritage of the common schools bequeathed to us by Horace Mann and Henry Barnard, to hear again the self-same rumblings. Yet, a recent plan to extend the school year into the summer months and to require parents to pay tuition for the attendance of their children forced Connecticut's present Commissioner of Education to denounce the plan as "vicious" and threatening a return to a system of pauper schools. The Commissioner understood his famous predecessor's dictum: "It is a common school where merit and not social position is the acknowledged basis of distinction, and therefore the fittest seminary to give schooling essential to the American citizen."[3]

Barnard also was instrumental in extending the concept of the common school to include secondary instruction. "What we want of the common schools," he said, "is enough education to educate ourselves."[4] His times demanded a new institution, and it came in the form of the public high school. In 1839, Barnard successfully piloted a graded school bill through the Connecticut Legislature. But it was only after the legal sanction afforded by the Kalamazoo Decision of 1874 that the American people committed themselves to tax-supported education from the kindergarten through grade 12. Students of this heritage have referred to the public high school as the greatest of American social inventions. It is the one institution in which all of the children of all faiths, all races, all social backgrounds can learn to share as they work and play together. James B. Conant has said, "That such schools should be maintained and made even more democratic and comprehensive seems to me to be essential for the future of this republic."[5]

In the field of public higher education, one hears today demands for fixed tuition rates based on parental income. Again, Henry Barnard foresaw this difficulty. The normal schools, which he so vigorously promoted, he defended as open, free public schools available to all who could demonstrate the ability and desire to teach. As chancellor of the University of Wisconsin and agent of the Normal School Regents, he welcomed the opportunity to consolidate a whole school system of tuition-free instruction from the kindergarten through the university. At St. John's College, Annapolis, Md., then a state institution recovering from the aftermath of the Civil War, Barnard's aim was to bring the college more firmly into the whole system of public instruction. He would seek larger grants-in-aid from both state and Federal governments. Then, with a note of reluctance, he added, ". . . but I will not rule out tuition charges to individuals, properly administered."[6]

Whether speaking of public elementary, secondary, or higher education, Henry Barnard pursued the principle of equal educational opportunity for all as few have pursued it before or since. The terms on which he accepted official positions relating to or involving all three levels of instruction clearly indicated his unwillingness to compromise with that principle and revealed his determination to remove all barriers erected against its fulfillment.

In matters pertaining to the profession of teaching, Barnard's contributions were many and varied. His famous Annual Reports for Connecticut and Rhode Island depicted the plight of the teacher in the district school. "Facts are what we need," he said, "and the sooner we can procure them the sooner shall we be able to carry forward with efficiency our system of common school instruction."[7] To Barnard, the task was to convert "school keeping" into "school teaching." His attack on the professional problem was as brilliantly conceived as it was quietly and patiently executed. He did not make the mistake, still practiced by some teacher organizations, of concentrating his efforts on one aspect of the problem. His weapon was publicity. It took the form of countless speeches, of demonstrations, of model schools and model teachers, as well as the printed word. He organized institutes for teachers, promoted normal schools, encouraged the introduction of new teaching methods developed in Europe by Comenius, Ratke, Basedow, and Pestalozzi. He wrote on school architecture (a subject previously ignored), and he gave the teachers of Connecticut a *Common School Journal*. By such strokes of educational statemanship, the man who worked in the fields in the summer and "kept school" during the short winter months, the woman who could spare time from household chores to carry on a dame school in her kitchen gave way to the professionally trained individual who made of school teaching a career.

Henry Barnard's efforts to professionalize education did not end in 1854. After returning from Europe, he launched the great *American Journal of Education*. It stands today as a classic repository of educational history, catholic in scope, scholarly in treatment—in short, the greatest single encyclopedia of world-wide topics on education and related subjects compiled by one

man. This "Great Thesaurus of Pedagogy" included among its contributors a veritable roster of 19th-century leaders: Josiah Willard Gibbs, James D. Dana, William Torrey Harris, Edward Everett, Samuel May, Daniel Coit Gilman, Francis Wayland, Noah Porter, Samuel A. Eliot, and others of equal eminence. Even more imposing were the reprints of famous educational writings from Plato to Pestalozzi.[8]

Forced to deplete his own wealth to keep the *Journal* solvent, Barnard mortgaged his home to raise funds. By 1878 he threatened to melt the plates and sell the stock of printed material for scrap. Dr. Robert Quick, professor of educational history at Cambridge University, author of the classic, "Essays on Educational Reformers" (dedicated to Henry Barnard), was informed by the New England Superintendent's Association of the Connecticut educator's intention. His reply is justly famous: "For my part," wrote Prof. Quick, "I would as soon hear that there was talk of pulling down one of our cathedrals and selling the stones for building material."[9]

Certainly one of the marks of a profession is the specific body of knowledge which it commands in the pursuit of the public service which it renders. The modern critic of education who insists that education does not have a subject matter worthy of independent study never has taken from the shelf a single volume of the *American Journal of Education*. Henry Barnard had set a high standard for educational literature, one not always maintained by those who have followed him. Even his contemporaries were skeptical of the scholarship in education which he had introduced.

There was, for example, that able eccentric, William D. Baker, whom Barnard had discovered in a classroom in Kingston. Barnard picked Baker to sell his pedagogical wares to the rural folk of Rhode Island, Connecticut, and later Wisconsin. He loaned the Kingston teacher a horse, harness, and buggy, and equipped the latter with the latest in schoolroom paraphenalia. Then he set "Baker's Circus" (as it was called) on the road to demonstrate to parents and citizens the new teaching methods that were to revolutionize the common school. "You laugh at Baker," Barnard wrote home, "but Baker is a very valuable man."[10] Yet, the protegé reprimanded his sponsor for the high scholarship of the *Common School Journal*. "To conquor the great enemy ignorance," he wrote to Barnard, "you must shoot low."[11] But Henry Barnard never lowered his sights.

Much has been said and written on the subject of government and education, and people do not seem to be able to choose sides lightly. What was Barnard's conception of the role that government was to play? What share of responsibility did he propose that each division—local, state, and Federal—should assume? Perhaps it was easier for the Connecticut educator, trained as a lawyer, to see this issue more clearly than we are able to do today, for it was not then clouded by volumes of positive law on the statute books of states and nations, nor complicated by the long precedent of living law, those habits of educational management which the people have come to take for granted. The framers of our Constitution had no examples to draw from in Europe. More by default than design, education became a function of the individual states. Barnard recognized this fact, and the educational acts which he devised for Connecticut and Rhode Island became models for other states to follow.

Early in his career, Barnard eloquently stated his view of the responsibility of the state for education:

> In my opinion, it is both just and expedient to provide liberally, but not exclusively, by state endowment, for the support of public instruction. As education is a want not felt by those who need it most, for themselves or their children, as it is a duty which avarice and short sighted self-interest may disregard, as it is a right which is inherent in every child, but which the child cannot enforce, and as it is an interest both public and individual which cannot be neglected, it is unwise and unjust to leave it to the sense of parental duty or the unequal and insufficient resources which individuals and local authorities, under the stimulus of ordinary motives, will provide. If it is thus left, there will be the educated few, and the uneducated many. This is the uniform testimony of all history.[12]

Of course, Henry Barnard did not live to see the property tax base for school revenue reach its limits, but it is clear that he would have supported state aid to education beyond the meagre income of permanent school funds.

The vision of this man was not defined by state boundaries. While at St. John's College, he laid the final strategy for the establishment of a U.S.

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[3] See A. D. Mayo, "Henry Barnard," Report of the Commissioner of Education (Washington: U.S. Bureau of Education, 1898), p. 772.

[4] Ms. note, Barnard Collection, Watkinson Library, Trinity College, n.d.

[5] J. B. Conant, "Education and Liberty" (Cambridge: Harvard University Press, 1953), p. 86.

[6] Minutes, Board of Visitors, Dec. 14, 1865, St. John's College, Md.

[7] "Message to the People of Connecticut," from the Office of Secretary of the Board of Commissioners of Common Schools, 1839.

[8] R. K. Morris, "Parnassus on Wheels," *Trinity Library Gazette*, No. 2:8, 1955.

[9] Reprinted in the *Journal of Education* (Boston), 14:7, Aug. 25, 1881.

[10] Letter in Barnard Collection, Watkinson Library, n.d.

[11] Baker to Barnard, Oct. 23, 1840, Monroe Collection, New York University.

[12] H. Barnard, "7th Annual Report," Superintendent of Common Schools of Connecticut, Hartford, 1852, p. 36.

Department of Education. He wrote to Daniel Coit Gilman: "It is the only office under gift of government which I would turn on my heels to get, as thirty years study and action have fitted me for this work, and I should like to wind up my educational labors in inaugurating this office."[13] Yet, from the beginning, the new department was undermined by outright hostility and lack of congressional support. Within Barnard's brief tenure, it fell from an independent department to an office under the Department of Interior.

A century ago, Henry Barnard prophesied an increased role for the Federal government in education. He initiated the government publications on the school systems of other countries. These documents today make it clear that we are the only major nation in the world without direct educational representation at the administrative level of national government. Presidential advisory committees in 1929 and in 1936 recommended that the Department of Education be reinstated with a secretary of cabinet rank. President Eisenhower's Commission on National Goals called for "either a separate Department of Education at Cabinet Level or a National Foundation (patterned after the National Science Foundation)." The commission observed: "Our tradition of local control in education is a healthy one, but we must not let it thwart us in accomplishing important national purposes."[14] When the time comes that we act as a nation in matters of education, let us not be confused or delayed by the clamor of special interests. The principle of public monies for public purposes must remain inviolate in education, or the work of Mann and Barnard indeed will have been in vain.

This, then, is the Barnard legacy: that we continue to have faith in the tax-supported public school system; that we recognize in that system a unique American social invention for the preservation and perpetuation of our domestic way of life; that we look upon teaching as one of the great callings of mankind, bending every effort to raise it to the full rank of a profession; that we have the vision which dares to place in the hands of responsible government, conceived as synonymous with the people themselves, the right and duty to foster universal education at local, state, and national levels of administration.

The man who gave us this legacy was a kind, gentle, non-controversial humanitarian who went about his tasks with unflagging energy, who seemed not to offend or be offended when his proposals based on the soundest of preparations took months or years to be enacted, or were rejected altogether. Unlike his more petulant counterpart in Massachusetts, Horace Mann, Barnard seldom made enemies and was not a fanatical or eloquent crusader, though he was a masterful publicist of the same great cause. He was indifferent alike to the flattery and censure of the world; he accepted the many honors bestowed upon him with grace and humility. He often accomplished as much in the solitude of his study as his Massachusetts friend accomplished in the public forum. He was the scholar, the intellectual leader of the great awakening in American education.

As a native born citizen of Connecticut—as one whose roots are in her soil—I am ambitious of being remembered among those of her sons whose names the State will not willingly let die, because of some service, however small, done to the cause of humanity in my day and generation; but I am more desirous to deserve, at the end of my life, the nameless epitaph of one in whom mankind lost a friend, and no man got rid of an enemy.[15]

This is the man and this is his legacy which we commemorate on the 150th anniversary of his birth.

[13] Barnard to Gilman, Jan. 10, 1867, Gilman Papers, Johns Hopkins University.

[14] "Goals for Americans," Report of the President's Commission on National Goals (N. Y.: Prentice-Hall, 1960), pp. 97-98.

[15] Quoted by R. C. Jenkins and G. C. Warner, "Henry Barnard" (Hartford: Connecticut State Teachers Association, 1937), p. 109.

Financing Higher Education in the Decade Ahead

By EDWARD F. RENSHAW
Professor of Agricultural Economics, University of California

With the cost of attending college rising to nightmarish proportions and the fear prevalent that there might not be enough room in our colleges to absorb the baby boom, most parents probably could be induced not only to establish savings programs for their children's future education, but also, in effect, to lend their savings to a university for needed capital improvements. While many kinds of investment instruments might be created to accomplish this dual objective, one of the most worthy of consideration is a system of loans involving little or no interest.

Suppose a parent were to save $100 per year for 10 years in order to pre-finance part of a college education. If the money were invested in a savings account yielding three per cent (about the best one can confidently do considering the small amounts to be invested and the risks involved in striving for a higher return), accrued interest, before taxes, would amount to only $150, or 15% of the $1,000 saved, a sum so small as to make little or no difference in the over-all financing of a college education. Indeed, considering the income tax that then would have to be paid, both the parent and the student would be better off to trade accrued interest for other privileges and considerations.

Suppose that in exchange for a loan of $100 per year for 10 years, the university were to agree (1) to underwrite the cost of enough term insurance so that the death of one or more parents would not jeopardize the loan series and (2) to provide the student beneficiary, upon evidence of satisfactory progress at an accredited institution of higher learning (not necessarily the university receiving the loan series), with a comparable interest-free loan. By sacrificing, at most, $150 in accrued interest before taxes, the parent would be able to insure his offspring of at least $1,000, or some multiple thereof, to help pay college expenses and also provide him with the valuable privilege of borrowing, at zero cost, an additional $1,000 to complete his studies.

Loans to the university in excess of entitlements, which would be sizable during the critical years ahead, would provide the university with a comparatively costless source of funds with which to add to plant and equipment and absorb the baby boom. If, in the long run, the demand for repayment loans were nearly to catch up with the supply of new loans, the university would have obtained the capital necessary for rapid expansion and, in the meantime, have pioneered a unique savings institution.

Aside from the insurance benefits and the rather obvious tax advantage in obtaining income in kind rather than in money, there also is the possibility that the net interest savings on the repayment loan would be more valuable to the student than the accrued interest on the parental loan. Suppose a person can lend money at three per cent but only can borrow at six per cent. In that event, there really is not much difference, so far as the parent and student are concerned, in the present value of the two loans. The saving of interest on the repayment loan is adequate to compensate, at three per cent, for the interest foregone on the initial loan. In this instance, the tax savings, insurance benefits, and the knowledge that credit will be available when needed can be regarded as a supplemental benefit above and beyond that required to make the loan exchange more attractive than a conventional savings account yielding three per cent.

While there are costs in administering a loan program, it is not unreasonable to suppose that the withdrawal of parental loans prior to maturity, the failure of students to meet minimum standards of eligibility, or the deliberate refraining from seeking a repayment loan would be sufficient to provide the university with a net loan large enough, in terms of its alternative cost, to cover administration, insurance, and a risk component for unrepaid student loans. The uncertainty surrounding the actual attainment of a college education could be turned, in effect, into a self-insuring feature.

A second advantage of a strictly educational savings program over life insurance, which comes the closest to providing the ideal investment instrument, is that much of the cost of promoting and selling the program can be passed on to alumni who feel a moral obligation to support their alma mater. In 1960, more than 20% of the alumni responded to requests for contributions to their university. If this loyalty and the fact that college graduates are more likely to set aside money for their children's education are exploited, the program could be promoted without salaried agents. (About 10% of the premiums paid to life insurance companies are used to pay commissions.)

The most important advantage of a loan-for-a-loan program, however, is that it would provide a way of purchasing credit which, otherwise, might not be available at any price. While character loans to students are not uncommon, the amounts involved are usually so small, relative to the total cost of a college education, that they cannot be counted on in developing an over-all financial plan.

Formalizing the amount of the loan to be obtained not only would permit parents to budget expenditures and savings more carefully, but also would provide an equitable basis for shifting part of the cost of a college education onto the student. Considering the partly fortuitous distribution of educability, the historical trend toward increasingly lengthy and ever more costly investments in education, and the possibility of financial benefits which often are associated with a

college education,* it is questionable whether the parents ought to bear the entire burden.

While many objections might be raised against individual colleges and universities administering their own educational trusts, there is no reason why this objective could not be obtained on a co-operative basis. A co-operative trust would avoid compromising the admission standards of particular universities and also would provide for children who do not wish to attend their parents' alma mater. A further advantage of a trust, somewhat autonomous from the sponsoring universities, is that it would reduce the risk both to the participating universities and to the beneficiaries of repayment loans. By allocating loans in excess of repayment obligations to the participating universities, in proportion to parental preferences, each alumni group would even have an incentive to promote the trust from the point of view of its own alma mater.

While many variations to this proposal might be worth investigating, it seems clear that those institutions of higher learning with no other choice than to experiment have a golden opportunity perhaps to pioneer a revolutionary change in the way higher education is financed. Certainly, there is room for imagination and even bold experiments. Out of the imperfections in the existing framework for financing higher education might come a more perfect method of financing an increasingly important investment opportunity.

* Edward F. Renshaw, "Estimating the Returns to Education," *Review of Economics and Statistics*, 42:318-323, August, 1960; and Herman P. Miller, "Annual and Lifetime Income in Relation to Education: 1939-1959," *American Economic Review*, 50:962-986, December, 1960.

The Road to Professional Martyrdom

By **RICHARD W. ELLIOTT**
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FOR A TEACHER who believes that school is for the development of the mind, the road to professional martyrdom is an easy one. Here are a few apt declarations which should help the teacher along that road and right into the next county school system:

"There will be no banking or 'thrift' program in the classroom." If parents want their children to learn thrift, the father should take the little ones by the hand down to the bank when *he* goes. There is no excuse of conflicting schedules; the banks now are open "for your convenience" on Thursday or Friday evenings. The teachers' instructional time and the time of any or all pupils will not be taken up with collecting deposits. (This position can be spiced if a bank board member happens to be on the school committee.)

"Pupils 'released' for orchestra or band either will make up studies after school or flunk." The sequential music program through the grades must suffice for all pupils during school time. If band lessons are considered necessary, the music supervisor or band director must arrange his time specifically so the administrator can set aside that same time with the other children for such pursuits as tap-dancing or power lawnmower operation. Imagine the pressure if the converse were true: released time from band for arithmetic instruction!

"I will not help my pupils engage in a national magazine circulation war." If the children must supplement their allowances, the pupils must use their own time to earn this pin money; if the school department must add to its coffers, the community need must dictate an appropriation from the public. The purpose of the operation is evident when the prizes, usually cash, total more than the subscription income: the magazines gain by boosting advertising rates based on increased paid circulation.

"Get your hands off that projector. I'll run it." If there is a fiery interest in such mechanics, the pupil can get satisfaction after school. His job, during the operation of equipment, is to pay attention to the materials being presented. Paradoxically, audio-visual experts have set up an empire within their own in which it is easier to train school pupils than adult teachers. With adult self-consciousness, long-time teachers have not approached the operation of newly introduced mechanical visual aids. Taking advantage of this, the "expert" has not encouraged them, but has gathered around him a patronizing group of malingerers—the "student committee."

"Pupil pictures? Good for laughs, but not at the expense of classroom time." The only advantage (to seventh-graders, for instance) of third-grade pictures is chuckle value. This lucrative intrusion on school time and school money has become so much more monetary than useful that it was necessary for the Professional Photographers of America, Inc., at their 1960 convention to warn photographers in their organization about giving under-the-table gifts to school per-

sonnel for contract concessions. If the administrators are to support picture-taking, the only excusable types are periodic full-length things taken against a yardstick to show spurts in growth and changes in posture. Most pictures now taken on school time are "cute" head shots.

"Pupil insurance is legitimate, but I'm not a debit collector." After a frantic week of passing out applications, rounding up collection envelopes, and filling out quadruple membership lists, the haggard teacher sends the envelopes with contents to the office so the principal can go through his routine of checking off the individual rooms. Then the insurance representative casually drops around to pick up his bundle—a somewhat better arrangement, for him, than peddling insurance from house to house.

"No homeroom clubs!" This particular response to children's requests may not bring parental pressure unless the pupils run home screaming that teacher is a monster because she won't let them have a club. A show of hands in the class will emphasize that most kids are wallowing in club activities: Scouts, 4-H, Community Boys' Clubs, Future Farmers, and "Y's"—all worthy organizations more capable of club-group purposes than a classroom.

In varying degrees throughout the grades, other intrusions are made on school purposes. Driver training, recently dropped in several states, is more properly within the realm of family or police. Collections for private charities should raise the question whether the school is the proper place. Safety patrols, office-telephone duty, student councils, and highly specialized inter-school sports programs also should come under scrutiny, the criteria being: Is this the purpose of school? Is the school the only or best place for these "learnings"?

In the attempt to develop a well-rounded child, educators may have expanded the school program to the danger point of producing a wafer-thin individual.

Framework for Education in Newly Emerging Nations

By RICHARD I. MILLER

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FOUR REALITIES about newly emerging countries set the tenor of this paper: nationalism, poverty, rising expectations, and faith in education. These realities greatly influence the nature and directions of education in newly emerging nations.

A new nation must have both capital and desire to carry through a reasonable rate of political, economic, social, and educational development. Desire without capital will not raise factories or import needed materials, nor can capital do for people what they are not willing to do for themselves. Education, then, must always be viewed as an important part of the whole, and in the context of many other forces and attitudes.

Education in emerging countries disrupts as it enlightens; it frustrates as it satisfies. The late Bronislaw Malinowski pointed out that the young African of today "lives in two worlds and belongs completely to neither. European education has alienated him from native traditions and imbued him with values and expectations of European culture. At the same time, European interests exclude him from the white community and deny him the material basis for the style of life he has been taught to aspire to."[1]

The inhabitants of Chan Kom, Mexico, found schools were useful for teaching the three R's and Spanish, but they disturbed the social behavior patterns through their coeducational practices and inculcated idleness and disinclination for the necessary hard work of cultivation. Since World War II, some anthropologists have directed their criticism of educational programs in emerging countries toward the failure of schools to bridge the gap between the old established culture and the intrusive new culture.[2]

Newly emerging countries should avoid Western stereotypes concerning what constitutes good education. The major educational problems in emerging countries—besides the perennial ones

[1] Bronislaw Malinowski, "The Pan-African Problem of Culture Content," *American Journal of Sociology*, 48:469, May, 1943.

[2] Margaret Read, "The Contribution of Social Anthropologists to Educational Problems in Underdeveloped Countries," *Fundamental and Adult Education*, 7:101, July, 1955.

concerning money—include illiteracy, disease, poor land and material resources, shortages of teachers and classrooms, elemental industrial development, and little history or experience with development. Over 50% of the children do not have consistent schooling of any sort. Surveys among African school children indicate that 60-70% are malnourished, 50% need nursing and medical attention, and 10% need hospitalization for diseases directly or indirectly attributable to malnutrition.[3] The life expectancy is still about 30 years in many countries. In most new nations, the boys can be expected to continue the agricultural work of their fathers and the girls can be expected to follow the pattern of their mothers. These patterns will predominate at least for several more generations.

A suitable curriculum might be constructed around six themes: one general theme—education for good citizenship; four directional themes—education for health improvement, vocational competency, professional and managerial competency, industrial and commercial development; and one concomitant theme—education for adults.

Education for good citizenship should permeate the curriculum at every point, assisting the people to live and work together without undue friction. It includes respect for such aspects of organized society and culture as the laws, customs, and taboos. It assists students in coming to terms with the environment and other people, and it assists them in gaining appreciation and understanding of the indigenous culture.

Education for citizenship does not have to be excessively nationalistic. It can move from the family to the neighborhood, to the school, to the community, to the nation, to the continent, and to the world, but the roots should remain planted in the indigenous culture.

Preventive health measures might well be an important aspect of the school program that would filter through the curriculum in many ways. For example, home economics and homemaking for the girls could include detailed lessons on nutrition, disposal of wastes, diseases (their prevention and cure); social studies could include lessons on the social aspects of disease as well as community action programs against disease. All health lessons should be adapted specifically to the area as much as possible.

Education for vocational competency is concerned primarily with agriculture, since two-thirds of mankind is involved in it, but many other occupations are also included. Some villages in the region of Lake Patzcuaro, Mexico, exist largely from the catch of fish from the lake; one village specializes in making sombreros; another makes a special type of blouse; and another is noted for its mat weavers. Education for vocational competency might stress two things: If a village is quite specialized in its livelihood, the schools might seek ways of improving the specialty and developing greater diversity in the patterns of livelihood. Highly specialized villages are sometimes at the mercy of uncontrollable factors, such as the world and national markets and the invention of new methods and materials.

Most people from other lands do not realize that a few parts of the U.S.A. still can be classified as underdeveloped areas. The three Sloan Experiments in underdeveloped parts of Kentucky and Florida, set up in 1939, assisted in the preparation of functional instructional materials based on the immediate needs of diet, housing, and clothing.[4]

Education for professional and managerial competency is essential for political stability, economic balance, and a reasonable rate of development. Educational programs for the so-called middle-class professions need to be developed along with programs that emphasize health education and rural-bias, but education for professional and managerial competency most likely will be developed in a separate or semi-separate school for the present time. Some modification of the comprehensive high school may be useful in emerging countries that have high concentrations of populations, but it is generally more practical and feasible to set up special schools for professional occupations that require highly specialized education. This has been the pattern, in fact, in most emerging countries.

Some American educators have criticized the selective processes in new nations by which only a small number of students are admitted to secondary education. A nation cannot afford to train large numbers of skilled people unless the economy is able to employ them. Apart from the possibility of wastage, the "educated unemployed" are usually restive and resentful. Already they are a problem in some countries.

Education for industrial and commercial competency generally requires special facilities. For example, the Ifunda Trade School in Tanganyika has over 300 students who study for three

[3] Theodore Gilman, "Malnutrition in African Conditions," Prudent Smith, editor, in "Africa in Transition" (London: Max Reinhardt, 1958), pp. 11-20.

[4] Maurice F. Seay, "The Applied Economics Core Curriculum," *Bulletin of the National Association of Secondary-School Principals*, 31:194-196, April 1947.

years such courses as building, carpentry, joinery, metal work, and mechanics; then students are placed in industry, as apprentices, for a further period of two years' on-the-job training. The program accepts students who have completed the first eight grades and passed the standard examinations.[5] The Government of Tanganyika offers special education and instruction in its Medical, Agricultural, Veterinary and Forest Departments, the East African Railways Administration, the Post and Telecommunications Administration, and the Government Press. The Government Press School, for example, offers a six-year course. Four years are spent at the school and two at the press. Instruction is given in all branches of the printing trade, including composing, machinery, bookbinding and rolling, and emphasis is placed on practical work. Periods also are set aside for lessons in arithmetic, English, and other subjects.[6]

Adult education can contribute a sense of citizen responsibility at the local level; help the people to understand tradition and change; improve health and crops; and provide exciting revelations about the world. Adult education becomes synonymous with fundamental education in countries with a high rate of illiteracy, but adult education is something different from fundamental education in industrial countries.[7]

The first Unesco international fundamental education center was opened at Patzcuaro, Mexico, in 1951. At that time, the director outlined these objectives for the center: "We intend to show students how to encourage the improvement of life in rural areas through the four cardinal points of fundamental education. First, man must protect his health. Secondly, he must make the best use of the natural resources surrounding him. Thirdly, he has the right to a dignified home life, both materially and spiritually. Fourthly, he has the right to enjoy leisure and he must be given the opportunity to do so." When asked about teaching reading and writing, the director answered: "As far as we are concerned, it is no use teaching a man to read and write unless you can convince him it will help solve the problems of his daily life. We teach literacy when we teach health or home economics or agriculture."[8]

A second international fundamental education center was opened in 1952 at Sirs-el-Layyan, Egypt, for the Arab world. National fundamental education teacher-training centers have been set up in some countries by graduates of the international centers. Other countries have borrowed and adapted aspects of fundamental education for their own purposes. A well-planned, extensive, and integrated program of education for adults is necessary for a significant "break through" or "jump ahead" in the emerging nations.

When Americans go overseas to help others help themselves, it is essential that ideas and techniques that are useful and known to us are adapted to what others want, need, and can achieve. Cross-cultural transplantation of ideas or methods require that they be stripped to the bone of cultural characteristics, then rebuilt in the other situation, using what is at hand. Margaret Mead has observed that "Western-trained professionals carry about with them an enormous amount of cultural baggage which could very well be discarded"[9] when they go abroad as technical assistants.

If a nation has sufficient desire and working capital, the factors of positive nationalism and tradition and change weigh heavily upon the program of education in emerging nations. Given these factors, as stated above, emerging countries might consider developing an educational program built around six topics: One general theme—good citizenship; four directional themes—health improvement, agricultural improvement, professional and managerial competency, industrial and commercial development; and one concomitant theme—education for adults. Educational leaders in emerging countries should be ready to depart quite radically from the more traditional Western type of education, if this appears feasible.

Effective education in the mid-20th century contributes to the desires of the society; helps perpetuate certain traditions of the society; provides avenues for advancement for the industrious; raises the general level of living; and creates some knowledge about, and understanding of, this small planet that is shared by well over 100 nations and territories that have widely differing backgrounds and outlooks.

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[5] J. F. R. Hill and J. P. Moffett, "Tanganyika: A Review of Its Resources and Their Development" (Dar-es-Salaam, Tanganyika: Government of Tanganyika, 1955), p. 68.

[6] Department of Education, Government of Tanganyika, "Annual Report of the Department of Education, 1953" (Dar-es-Salaam, Tanganyika: Government Printer, 1954), pp. 23-25.

[7] Walter H. C. Laves and Charles A. Thomson, "UNESCO: Purposes, Progress, Prospects" (Bloomington, Ind.: Indiana University Press, 1957), p. 163.

[8] "UNESCO: Ten Years of Service to Peace" (Paris: Unesco, 1956), pp. 20-21.

[9] Margaret Mead, "Cultural Patterns and Technical Change" (New York: New American Library, 1955), p. 294.

BETWEEN THE TWO CULTURES: *An Existential View of Curriculum*

By DEAN W. O'BRIEN
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LOOKING ACROSS the cultural gulf described by C. P. Snow, The Scientists seem to see The Literary Intellectuals as maddeningly ambiguous, blithely ignorant of social problems, and insupportably proud of the allegedly make-believe world they inhabit. Snow, looking in the other direction, sees The Scientists as precise, widely informed, and intellectually sound but lacking a bit in "imaginative understanding." While he clearly implies that The Intellectuals need scientific literacy more than The Scientists need artistic sensitivity, Snow does concede that both cultures, to some degree, are impoverished by their reciprocal isolationism.

Caught in the middle, the school is, on the institutional level, most strategically located to do something about the broken lines of communication between Snow's two cultures. And on the level of thought the existential temperament occupies a similar no-man's land.

Probably the educator and the existentialist will find it mutually embarrassing when they come to realize that they share common ground. But after the first blush has faded, the educator and the existentialist should find comfort in a natural alliance. They will get very little comfort elsewhere except by giving up their exposed and necessary positions to give in to either the subjectivity of art or the objectivity of science, neither of which is the whole truth.

Existentialism is often mistaken for the subjectivity of the unscientific. Poets, painters, novelists, theologians, psychotherapists, and, of course, philosophers undeniably have represented existential thinking more than scientists have. Yet, most existentialists insist that it is a part of the nature of man to be in a situation, and today a good deal of that situation is composed of the products and abstractions of science. Such existentialists as Sartre and Beauvoir are forever urging their introspectively inclined European contemporaries to come out of their private worlds and participate in the other half of reality: the public world of science and society. For their other-directed American contemporaries, however, the existentialists have a different message. The existential corrective in America would be this reminder: an individual is far more than the sum of the perceptions other men have of him. To an existentialist, the private, subjective world and the public, objective world are contingent upon one another, solitude being senseless (one might say neurotic) for anyone who has no human connections and society being senseless (one might say dull) when it is not nourished by solitary individuals.

So it would seem existentially helpful to set up a dichotomous curriculum, to split the infinity, so to speak, and leave the student in the tension between the two halves. That is where he is anyhow, but he ought to know it.

One half would deal with the past, the public, the probable, the provisional, and the progressive. It would embrace the bulk of science, history concerned with "facticity," English concerned with the tried and approved techniques of language, mathematics and other rational systems that prevail, data on governments as they have been, and the like. There is nothing constant about this content; absolutes here are obsolete. Science continually junks its earlier work as almost ludicrously naive; new facts upset earlier notions of what actually happened in history; a statement written in another period or culture must be interpreted in the current vernacular; Euclidean geometry is almost moribund; and governments change.

The other half would lie in the precinct of the present, the personal, the possible, the permanent, and the perennial: the beauty, genius, and lucky coincidences of scientific discovery; history as human possibility (not here that Gandhi's life made no demonstrable difference in Indian independence, but that such an improbably fine human being could be); art and literature and philosophy in which one can hardly say that Picasso's work is somehow better than the prehistoric cave paintings or that Faulkner is a vast improvement over Sophocles or that logical positivism has invalidated Greek idealism; also here the utopian proposals that never will be adequately tested. The futility of publicly proving out these mysteries of Truth, Beauty, and Goodness should be no more depressing than the transience of solutions to problems in the objective half of this existential

curriculum. It should at least be invigorating because it makes freedom possible, poignant, and worth the risk.

Now nothing could be so existentially obnoxious as to tack on some explicit behavioral goals here. That is, the graduate would be expected to behave, but the definition of his action would be left to the individual, who is the only one both to know and decide what he is. The risk of such a position on the purposes of education is, of course, great, but human dignity and freedom require great risk. Furthermore, explicit behavioral goals would be existentially "inauthentic" in that they would have to be based on the somewhat arrogant assumption that one free and conscious human being (a curriculum planner, perhaps) can understand thoroughly another free and conscious human being (a student)—an impossibility without destroying the existential notion of being human. The educator, like any man, is morally responsible only for himself but has commitments (commitments are essential to freedom in existential thought) to both the pupil and the society. More specifically, an existential educator might be expected to have this set of commitments: to protect the pupil from external definitions of what he is; to show the pupil what a man can be; to protect the society from misconceptions of what it is; and to stimulate conceptions of what society could be.

To Protect the Pupil. It should be made clear to the pupil that psychological findings never can be definitive of what he is because, to be properly scientific, the findings must be repeatable and communicable, and human beings are neither entirely repeatable nor wholly communicable. (As Dylan Thomas once said, "Your bliss and suffering are forever shared and forever all your own.") Such findings give more indication, in fact, of what society is in that they show how pupils are perceived by a specialized segment of society. They describe a mechanism that exists to permit social bodies, or institutions, to deal with, categorize, and otherwise apprehend their members for collective ends. Thus, only at the points where my private intent coincides with particular social purposes that someone else thinks he wants me to serve will my I.Q. have any bearing on my existential worth.

"Wherever two are together with a third thing, which takes both out of themselves, there is education," Ralph Harper says. The principle thing perceived by both teacher and pupil, then, ought to be the subject matter, not each other, because being perceived, being *en-soi*, a thing-in-itself, like a rock, limits freedom. Evaluation should not be child study; it should be based on the degree to which the pupil has made his intent intelligible. Giving a low rating to a pupil because the child's intent is not, in the teacher's eyes, adequately lofty or demanding or appropriate would be a form of external criticism which is not logically legitimate.

To Show What a Man Can Be. This is the half of the existential curriculum described earlier as dealing with the present, personal, and perennial. It is a zone to be entered not as a problem, but, in Gabriel Marcel's expression, "as a mystery." And so such mysterious propositions as "Truth is Beauty," Sartre's "I am not, therefore I think," and many others would confront the pupil, but with no promise or expectation of intelligible solution. The pupil would be left to shift for himself. He would have to ponder and live and observe and risk for many years, his whole life, to understand such challenges to his existence. He would die in the end without solving them, much like the man in Kafka's existential parable in *The Trial.* But at least he might come to know that life and education are not matters so much of finding as of seeking.

To Protect the Society. Here is the transmission of the cultural heritage idea clothed, perhaps, in more existential language. The social past is, in fact, the only segment of time that can be transmitted at all, the present being private property that the individual cannot get rid of no matter how fluent he may be in translating his perceptions of experience into intelligible public idiom, and the future being existentially a matter of decision. This past is not unimportant, but it is Sandburg's "bucket of ashes"; it is the level of knowledge described by Matthew Arnold in "Literature and Science" as science. Because it is dependent upon man-made naming systems like language and mathematics, it is abstract rather than concrete, made rather than born, intelligible rather than intelligent. Existentially, then, life must be lived forward but understood backward.

So that its past will not have been in vain, the society sponsors schools to pass the past on to pupils, the trespassers in a world that one day will be their own. And the pupils, on their side, ought to find the past useful in existentially working themselves out in their human situation.

Society ought to be curricular boss in this realm. The more bossy it is, the more directly the pupil will be able to see the values of society at work. The only brakes on society's prerogative, and they are important ones, are the teach-

er's commitments to protect the child and to honor the whole of human society through the long span of history. The teacher's presumed sophistication as to what society really has been, in opposition to what society would like to think it has been, should qualify the teacher to fulfill this second commitment.

To Stimulate Social Conceptions. Leaving the pupil to his own decisions concerning his social action, this commitment would demand that the teacher rigorously criticize the inevitable flaws in ruling abstractions, in The Establishment, in The System. In today's world—where a critic is known not as a critic but as a "crank," where the individual tends too much to say that the world is a mess "but what can I do about it?", where open and sincere controversy are commonly considered "unsophisticated," where popular inclinations are so easily consolidated and perpetuated in the mass media, where professionals see their worlds as inaccessible to lay judgment, where eccentric behavior is called either psychotic or criminal and treated accordingly, where the unpredictable is seen as disturbing rather than as refreshing—in such a world, this fourth commitment of the teacher becomes the most important of all. Here is the modern tragedy, so well documented in the arts, of the individual's sense of anonymity, purposelessness, and helplessness. The culpable social condition might be called the rigged environment.

This condition can be perpetuated in the schools as handily as it is in the not-so-open society. It consists of one person, or group of persons (politicians, businessmen, teachers, or others), creating an environment in which it is not sane or decent for an individual to suggest that his personal worth in any important way could differ from what is expected of him, or to insist that he may have anything new or unanticipated to contribute to the environment. The result is that the individual feels compelled either to retreat into an abnormally subjective isolation and deny that he has some social relevance or else to join the adherents of communication (those who are for talking but against saying anything) and deny that he is an unprecedented human individual. Among some teachers who try to follow Dewey, there is a tendency toward this manipulation of environment. The child may find it extremely hard to get a responsible understanding of freedom when subtle and undue constraint is made to

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seem natural and inherent in group membership.

Nor would the existentialist be happy with the tendency to think of teaching the skills in such areas as democratic process and scientific method or even in reading and arithmetic as significantly different from or superior to teaching "mere information." He would wonder if the teaching of a skill is really different in kind from reporting other sets of social agreements. If the pupil doesn't learn that such agreements are not so venerable as they are vulnerable, if he does not learn that the forms are actually dependent upon his alterations for vitality and meaning, then how will the pupil know that he can and must renew the otherwise inanimate social forms of language, mathematics, science, democracy? Like cliches, these forms are easily drained of meaning, but when that happens, the individual, despite his apparent fluency, is almost unable to say anything with his life.

It would be so simple to choose between science and art, or between the society and the individual, and then to dismiss the rejected hemisphere of the intellectual world as unreal or irrelevant. It would be simple, but not honest.

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(Continued from page 390)

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